CAMBRIDGE SYSTEMATICS

Limited Amendment TranPlan 21 to Comply with SAFETEA-LU: Draft Policy Statement and Supporting Background Material

Task 2.4 – Capital, Operations and Management Strategies, Investments, Procedures, and Other Measures

draft

Report

prepared for

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Draft Policy Statement – Capital, Operations and Management Strategies, Investments, Procedures, and Other Measures

One of the requirements in SAFETEA-LU is that state Long-Range Transportation Plans emphasize the efficient management and operations of the existing transportation system. This report presents a summary of these provisions in SAFETEA-LU along with other Federal policies and guidance, describes the extent to which the MDT *TRANPLAN 21* and other efforts address these requirements, and presents draft policy statements for incorporation into the amended *TRANPLAN 21*.

■ Federal Policies

SAFETEA-LU Requirements

The final planning rule for SAFETEA-LU requires state Long-Range Transportation Plans to facilitate the efficient management and operation of the existing system. Specifically, these requirements include:

- **23 CFR Section 450.206(a) – (7)** Promote efficient system management and operation; and **(8)** Emphasize the preservation of the existing transportation system.

- **23 CFR Section 450.214(b) –** The long-range statewide transportation plan should include capital, operations and management strategies, investments, procedures, and other measures to ensure the preservation and most efficient use of the existing transportation system. The long-range plan may consider projects and strategies that address areas or corridors where current or projected congestion threatens the efficient functioning of key elements of the state's transportation system.

To further clarify, **23 CFR Section 450.104** defines ***Operational and Management*** strategies to mean actions and strategies aimed at improving the performance of existing and planned transportation facilities to relieve congestion and maximizing the safety and mobility of people and goods.

National Strategy to Reduce Congestion

In addition to the SAFETEA-LU legislation, on May 16, 2006, the U.S. Secretary of Transportation announced a national initiative to address congestion related to highway, freight, and aviation. The intent of the "National Strategy to Reduce Congestion on America's Transportation Network" is to provide a blueprint for officials to tackle congestion. The U.S. DOT is encouraging state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to demonstrate new congestion relief

strategies and deploy operational technologies and practices that help manage or reduce congestion. An overview of this national congestion initiative can be found at http://www.fightgridlocknow.gov.

Federal Highway Administration Guidance

In response to SAFTEA-LU and the new national policy on congestion, the Federal Highway Administration (FHWA) is in the process of developing a guidebook to assist state DOT's in implementing management and operations strategies designed to reduce congestion and to improve current Congestion Management System (CMS) planning practice. Although the guidebook is still in the early stages of development, the emphasis is to develop a process to reduce congestion that is objectives-driven and performance-based. This would be a process that identifies and describes a congestion problem, develops objectives and performance measures for reducing congestion, identifies and evaluates improvement strategies, and then monitors the performance of those strategies over time and evaluates their effectiveness. The guidebook also will provide descriptions of analytical tools available to evaluate the effectiveness of various operational strategies on congestion. FHWA also is developing a guidebook on management and operations for MPOs and a guidebook on the Congestion Management Process (CMP) for Transportation Management Areas (TMAs).

FHWA Pavement Preservation Technical Summary

The FHWA recently assessed the MDT pavement preservation program, policy, and procedures. The goal of the assessment was to identify strategic opportunities for each DOT to maximize its pavement preservation benefits, including longer-lasting, smoother, and safer pavements. The FHWA is anticipating the submittal of their report to MDT by May 2007. The relevant recommendations from this report will be incorporated into the summary and draft policy recommendations of this Task 2.4 memorandum as well as the subsequent reports to be prepared for the Limited Amendment of *TRANPLAN 21*.

■ *TRANPLAN 21* and Other MDT Actions

Management and preservation of the existing transportation system is a key focus of the latest *TRANPLAN 21* update. *TRANPLAN 21* includes policies that address access management, pavement management, asset management, intelligent transportation systems (ITS), transportation demand management (TDM), bicycle and pedestrian transportation, and transit. For example, the following is a list of some of the policies and actions in *TRANPLAN 21* that illustrate management and preservation of the existing system and address congestion relief related to roadway system performance, access management, bicycle and pedestrian transportation, and public transportation.

Roadway System Performance

- **Policy Goal A –** Establish explicit priorities for roadway improvements. These priorities are preservation, capacity expansion, and other improvements.

- **Action B.3 –** Establish and implement proactive corridor preservation in corridors forecast to have capacity constraints over the next twenty years.

- **Action B.6 –** Develop a Context Sensitive Design toolkit to support project development.

- **Action C.2 –** Identify and deploy cost-effective ITS applications to improve safety and system productivity.

- **Action C.3 –** Encourage the MPOs to include enhanced traffic control and management systems in their long-range plans.

- **Action C.4 –** Strengthen MDT's traffic operations capability to reduce delay and improve travel times through better traffic management.

Access Management

- **Action A.3 –** Establish an Access Management Plan that identifies and helps preserve priority corridors.

Bicycle and Pedestrian Transportation

- **Policy Goal A –** Institutionalize bicycle and pedestrian modes.

- **Policy Goal B –** Target bicycle and pedestrian improvements to account for urban, rural, and regional differences in current and future use.

Public Transportation

- **Policy Goal A –** Promote and support increased use of public transportation systems.

- **Policy Goal D –** Identify and implement transportation demand management actions that will work in Montana.

These policy goals and actions are currently a focus of TRANPLAN *21* and will continue to be a focus of the Limited Amendment of TRANPLAN *21*.

Performance Programming Process (P^3)

MDT uses computer-based management systems, through the Performance Programming Process (P^3), that assist in summarizing and managing the condition of the transportation system and evaluating the impacts of various investment options. These systems are used in managing highway pavements, roadway congestion, bridge conditions, and safety; and

are supported by an annual data collection program. For example, ride quality, rutting, delay time, traffic volume, pavement cracking, bridge deck condition, and crashes are just a few of the many technical and operational characteristics tracked annually by these systems. These management systems currently are used to track the actual performance of the highway system after investments are implemented. This feedback loop has increased the predictive capability of the management systems and of MDT's overall accountability and management of their transportation system.

P³ allows MDT to assess how well it is meeting the goals developed in *TRANPLAN 21.* This asset management based approach to programming helps MDT determine the appropriate investment mix between types of work (reconstruction, rehabilitation, and preservation) to optimize system service life, safety, and mobility. In support of P³, performance measures were developed and are used to track closely with *TRANPLAN 21* goals and then it is used to provide an annual assessment of how well those goals are achieved. For instance, MDT has an objective to maintain and improve congestion levels through improving system operations within urban areas. This includes funding intersection improvements, signal synchronization projects, and directing funding towards pavement preservation projects. These types of actions together result in a much better managed system. MDT uses a congestion index (travel delay measures) to track congestion levels. The Congestion Index measures travel delay against the established performance targets by highway classification and uses this measure to determine performance over time and to evaluate system operations improvement strategies. MDT is currently using P³ to support current planning and programming, and will continue to be refined and used by MDT to support transportation planning, policy, and the Limited Amendment of *TRANPLAN 21.*

Highway Economic Analysis Tool (HEAT)

The Highway Economic Analysis Tool (HEAT) was developed by MDT to assess the transportation system and cost effectiveness potential of highway corridor improvements of various types across the State. HEAT provides a rigorous analysis capability to evaluate, measure, and compare the effectiveness of corridor capacity, management, and operations enhancements and strategies. Performance or user benefits related to safety (improved crash rates), environmental (reduced air emissions), and transportation (reduced delay and improved mobility), among others, are built into HEAT to assess the benefit/costs of corridor improvements.

HEAT, because its performance and economic analysis models are linked to both statewide economic (Regional Economics Model, Inc. – REMI) and passenger and freight travel demand models (TransCAD), also can be used to assess the future transportation corridor impacts relative to economic growth. Management and operational strategies using HEAT and some aspects of P³ are being used by MDT to assess management, operational, and capacity improvements to the State's transportation system. For instance, a strategy to improve travel delays and system reliability for a corridor can be evaluated with capital improvement projects or operational strategies. HEAT can be applied to determine the impacts and potential benefits of these strategies and can be used to compare their relative cost effectiveness regarding other strategies within the same

corridor or in other corridors. MDT continues to refine and use HEAT to support ongoing transportation planning and policy analysis as part of the Limited Amendment of *TRANPLAN 21* and other statewide and corridor initiatives.

Corridor Studies

TRANPLAN 21 recommends that MDT establish and prototype a process and guidelines for developing corridor-level strategies that address reconstruction needs. With this recommendation MDT plans to conduct corridor-level studies on facilities at capacity to analyze the need for improvements, including cost effective/low-cost corridor management strategies such as TDM, incident and access management strategies, and intersection improvement strategies. This process is used to inform the NEPA /MEPA process and help eliminate alternatives to be studied and define the purpose and needs statements used during NEPA/MEPA . The corridor planning process reduces the cost of the environmental process, speeds project delivery, and provides early involvement of environmental interests, regulatory agencies, and the public. The corridor plans also address broader issues than traditional environmental analysis such as land use planning and socioeconomic conditions. The corridor planning process complements the NEPA/MEPA process and ensures decisions are made at the appropriate level, considers low-cost alternatives, and available funding. MDT will continue to use this corridor planning process to support *TRANPLAN 21* and state and corridor-specific planning other efforts.

Summary

In summary, SAFETEA-LU places emphasis on management and operations strategies that address congestion in the development of a state's Long-Range Transportation Plan. MDT through *TRANPLAN 21*, the P^3, HEAT, and Corridor Planning currently does an excellent job of identifying, recommending, and evaluating the effectiveness of management and operations strategies. *TRANPLAN 21's* approach to congestion management is multimodal, involving transit, bicycle and pedestrian use, access management, land use planning, ITS, and TDM. MDT will continue to use this approach to amend its long-range transportation plan.

Furthermore, the MDT planning process currently does an excellent job of addressing the goal of the FHWA guidebook initiative which is to encourage state DOTs to develop a planning process that is objectives-driven and performance-based. For example, the MDT planning process establishes goals and objectives to address congestion through management and operations strategies, and then develops performance measures to monitor and evaluate the effectiveness of those strategies.

■ Draft *TRANPLAN 21* Policy Amendments

Considering MDT's current focus on operations and management in *TRANPLAN 21*, it is recommended that limited amendments on management and operations be made to

Roadway System Performance – Policy C – Improve the Productivity of the Roadway System. The following is a list of existing actions (Actions C.1 - C.4) along with additional draft policy amendments (Action C.5 – C.8) to *TRANPLAN 21*:

Policy C – Improve the Productivity of the Roadway System

- **Action C.1 –** Include consideration of public transit needs in updates to the Geometric Design Standards and identify criteria and locations for transit supportive design**.**

  MDT will establish options for accommodating public transportation most effectively on Montana's highways as demand increases.

- **ActionC.2 –** Identify and employ cost-effective ITS applications to improve safety and system productivity.

  MDT has a number of ITS applications in place and under deployment that positively affect travelers and the transportation system. MDT will continue to deploy advanced technology to improve the productivity and safety of the transportation system.

- **Action C.3 –** Encourage the MPO areas to include enhanced traffic control and management systems in their long-range plans.

  Traffic volumes will increase in Montana's urban areas due to growth. This action encourages MPO planning for traffic control and traffic management to improve system productivity and air quality enhancement.

- **Action C.4 –** Strengthen MDT's traffic operations capability to reduce delay and improve travel times through better traffic management.

  Currently, MDT has very limited capability to ensure that its many traffic signals have the optimal timing and coordinate with city operated signals. Building this capacity will represent a cost-effective approach to maintaining mobility and addressing travel demand growth.

- **Action C.5 –** Promote efficient system management and operations, and emphasize the preservation of the existing transportation system by implementing strategies that manage travel demand, enhance mobility, and extend the service life of the system.

  This action encourages maximum utilization of Montana's existing transportation system. Traffic volumes and congestion on existing facilities are projected to increase. Strategies promoting preservation and efficient use of the transportation system are alternatives to construction of new infrastructure to meet this increased demand. Constraints such as right-of-way, environmental impacts, community concerns, and funding limitations can inhibit the construction of new infrastructure. Implementation of travel demand management and system preservation strategies can increase capacity without the same opposition and limitations. In its planning and programming process, MDT will consider such means as viable options to effectively and efficiently develop its transportation system to meet future demand.

- **Action C.6 –** Utilize P^3 to establish objectives and performance levels for preserving the condition of the existing system and addressing growing congestion.

  MDT has developed a computer-based management system, the performance programming Process (P^3), that is being used to assess alternative investments and strategies. For instance, P^3 can be used to assess system performance of alternative strategies for pavement preservation, traffic operations, or capacity improvements. It can also be used to help determine the programs in which to make appropriate investments. This action incorporates use of P^3 into the planning process, ensuring that valuable information is made available during the assessment of alternative investments.

- **Action C.7 –** Conduct pre-NEPA/MEPA corridor studies on facilities at capacity to analyze the improvement needs, at various levels, including low-cost, corridor management and operations strategies along with consideration of available funding.

  MDT has established a corridor–level planning process to study the need for reconstruction or other cost-effective/low-cost strategies such as TDM, incident management, access management, and intersection improvements. This action allows for early involvement of regulatory agencies and environmental interests as well as saves time and money.

- **Action C.8 –** MDT will continue to use and refine the Highway Economic Analysis Tool (HEAT) to support ongoing planning and policy analysis including the benefits and costs of alternative investments to the state transportation system.

  HEAT was developed by MDT to assess the impact of future transportation investments on economic growth. HEAT can also be used to evaluate operational strategies as well as capacity improvements including strategies to reduce travel delay and improve system reliability. This action is intended to encourage the continued consideration of the linkage between economic growth and the transportation system.